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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO.   |
|--|-------------|----------------------|---------------------|--------------------|
| 10/772,115   | 02/03/2004  | Cullen E. Bash       | 200311131-I         | 4299               |
| 22879  | 7590        | 08/04/2005           | EXAMINER            |                    |
| HEWLETT PACKARD COMPANY<br>P O BOX 272400, 3404 E. HARMONY ROAD<br>INTELLECTUAL PROPERTY ADMINISTRATION<br>FORT COLLINS, CO 80527-2400 |             |                      |                     | EDWARDS, ANTHONY Q |
| ART UNIT   |             | PAPER NUMBER         |                     |                    |
|  |             | 2835                 |                     |                    |

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/772,115             | BASH ET AL.         |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Anthony Q. Edwards     | 2835                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 20 May 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-6,8-10,12 and 14-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-6,8-10,12 and 14-23 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 20 May 2005 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/20/05</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

The indicated allowability of claim 13 is withdrawn in view of the newly discovered reference(s) to U.S. Patent Application Publication No. US2004/0107718 to Bowman et al. (“Bowman” hereinafter). Rejections based on the newly cited reference(s) follow.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 9, 14-19, 21 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Bowman. Referring to claim 1, Bowman discloses a modular computer system for mounting in a multi-tiered (see Fig. 1) comprising a computer chassis configured for mounting in the multi-tiered support, a first computer component (220) within the computer chassis, an evaporator (230/520) in thermal communication with the first computer component, the evaporator being configured to dissipate heat from the first computer component by evaporating liquid coolant from a stream of liquid coolant to produce a stream of coolant vapor, a condenser (515) configured to dissipate heat from the stream of coolant vapor to add liquid coolant to the stream of liquid coolant, and an air mover (500/550) configured to cool the condenser, and one or more additional computer components within the computer chassis, wherein the air mover causes airflow that directly cools the one or more additional components, wherein the air mover

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draws air through the condenser, and blows air toward the one or more additional computer components. See Figs. 9 and 10 and paragraph [0048].

Referring to claim 2 and to method claims 16 and 17, Bowman discloses the apparatus as claimed, wherein the chassis is a 1U rackmount chassis. See paragraph [0054].

Referring to claim 3, Bowman discloses the apparatus as claimed, wherein the evaporator and the condenser are configured as a gravity-driven, pumpless, closed-loop cooling system. See Fig. 10 and paragraph [0054].

Referring to claim 4, Bowman discloses the apparatus as claimed, wherein the evaporator and the condenser are part of a closed-loop cooling system, and further comprising a coolant pump (525) configured to pump coolant through the closed-loop cooling system. See paragraph [0055].

Referring to claim 5, Bowman discloses the apparatus as claimed, wherein the condenser defines a downward coolant pathway configured for the coolant to travel gravitationally downward while condensing from the stream of coolant vapor to the stream of liquid coolant. See paragraph [0055], lines 1-7.

Referring to claim 9, Bowman discloses the apparatus as claimed, wherein the air mover is further configured to pump move air heated by the condenser out one or more exhaust vents in the chassis.

With respect to claim 14 and the corresponding method claim 15, please refer to the above rejection to claim 1, as well as to Figs. 1, 9 and 10.

Referring to claim 18, Bowman discloses a method, wherein the step of removing is conducted in a downward coolant pathway configured for the coolant to travel gravitationally

downward while condensing from the stream of coolant vapor to the stream of liquid coolant.

See Figs. 10 and 11, as well as paragraph [0054].

With respect to claim 19, see the above rejection to claim 1. Additionally, the airflow control structure extending substantially across an intermediate portion of the chassis to define two chambers (655 & 660) and the airflow control structure including an air mover (300) configured to move air from a first chamber of the two chambers to a second chamber of the two chambers is met by Bowman in Figs. 2 and 9, as well as in paragraph [0061].

With respect to claim 21, see the above rejection to claim 1. Additionally, the element relating to a body within the chassis, the body defining a plurality of cooling fins and a fluid passageway in thermal communication with the cooling fins, and an air mover configured to cool the plurality of cooling fins, wherein the air mover forces air through the cooling fins, and wherein the air mover forces airflow into thermal communication with the one or more additional computer components is met by Bowman in Figs. 10 and 11 and the corresponding specification.

Referring to claim 22, Bowman discloses the system as claimed, wherein an air mover (500) forces airflow that cools the condenser (515), and wherein the air mover forces airflow into thermal communication with the one or more additional computer components (575). See Figs. 10 and 11 and the corresponding specification.

***Claim Rejections - 35 USC § 103***

Claims 10, 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowman. Although Bowman does not specifically disclose an air mover in the form of a plurality of fans extending across an intermediate portion of the chassis, it has been held that a mere duplication of the essential working parts of a device involves only routine skill in the art (see MPEP 2144.04; *In re Harza*, 274 F.2d 669, 124 USPQ 378 CCPA 1960)). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Bowman to include a plurality of fans, so that a user can determine which computer component receives proper cooling as needed.

Likewise, it is well known in the art of liquid-cooling systems to rearrange parts where needed. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Bowman, since it has been held that rearranging parts of an invention only requires routine skill in the art (see *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950)). such that the fans are located two connecting portions are arranged at the top-side and the underside of the frame, respectively, since this would allow for gravity assisted flow of the fluid within the system.

Claims 6, 8, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowman in view of U.S. Patent No. 6,657,121 to Garner. Referring to claim 6, Bowman discloses the invention as claimed, including further comprising a second computer component within the chassis (see the last four lines of paragraph 0048). Bowman does not specifically disclose a second evaporator in thermal communication with the second computer component. Garner teaches providing first and second computer component (15, 16) within a chassis (8), and

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first and second evaporators (70) in thermal communication with the second computer component, the second evaporator being configured to dissipate heat from the second component by evaporating liquid coolant from a stream of liquid coolant to produce a second stream of coolant vapor, wherein the condenser is configured to dissipate heat from the second stream of coolant vapor to add liquid coolant to the stream of liquid coolant (see Figs. 2 and 3, as well as col. 6, lines 52-62).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Bowman to provide the second component with a corresponding second evaporator, as taught by Garner, since the device of Garner would allow for more computing power, as well as the needed cooling capability, on a single server.

Referring to claim 8, Bowman in view of Garner disclose the system, wherein the stream of liquid coolant and the first stream of coolant vapor both extend from the first evaporator to the second evaporator through a common passage (42), and the first and second streams of coolant vapor intermix and extend from the second evaporator to the condenser through a common passage (42). See Fig. 2, and col. 6, lines 47-62 of Garner.

Referring to claim 12, Bowman in view of Garner disclose the system as claimed, wherein the air mover blows directly toward the one or more additional components. See paragraph 0048 of Bowman.

#### *Response to Arguments*

Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Q. Edwards whose telephone number is 571-272-2042. The examiner can normally be reached on M-F (7:30-3:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on 571-272-2800, ext. 35. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 26, 2005  
aqe

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